UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF ENVIRONMENTAL CLEANUP

MEMORANDUM

DATE: May 13, 2016 (revised September 29, 2016)

SUBJECT: Revised Draft – Feasibility Study Work Plan – Operable Unit 1
Former Rhone-Poulenc Site
ECSI #155
March 11, 2016

FROM: Eva DeMaria, Remedial Project Manager

TO: David Lacey, Project Manager
Oregon Department of Environmental Quality

Following are the United States Environmental Protection Agency's (EPA's) comments on the March 11, 2016 Revised Draft – Feasibility Study Work Plan – Operable Unit 1, Former Rhone-Poulenc Portland Site, Portland, Oregon, ECSI #155 (2016 FS Work Plan). Golder Associates, Inc., on behalf of StarLink Logistics Inc. (SLLI), prepared the 2016 FS Work Plan in response to comments from Oregon Department of Environmental Quality (DEQ) and EPA on the July 8, 2013 Feasibility Study Work Plan.

The purpose of EPA's review was to evaluate if the scope of the 2016 FS Work Plan and data collection plan included in the Appendix A: FS Data Gaps Work Plan (Data Gaps Work Plan) are adequate to provide sufficient data to evaluate the groundwater pathway to the Willamette River in support of the FS for the Rhone Poulenc site. EPA's comments are focused on how the 2016 FS Work Plan addresses EPA's previous comments on SLLI's July 8, 2013 FS Work Plan and SLLI's October 2015 Groundwater Monitoring Work Plan. EPA's comments have been refined to focus on the immediate needs of the FS per discussions during a conference call held between EPA and DEQ on September 12, 2016.

EPA's comments are presented in the following sections. Comments have been separated as "Primary," which are comments that identify concerns that must be resolved to achieve the assessment's objective and "To Be Considered," which are comments that if addressed or resolved would reduce uncertainty, improve confidence in the document's conclusions, and/or best support the assessment's objectives.

Primary Comments

1. The 2016 FS Work Plan fails to address the data gaps related to characterization of the deep groundwater pathway to the Willamette River via the Alluvial-Colluvial Gravel (ACG) and the Columbia River Basalt Group (CRBG). The proposed FS data gap sampling is insufficient to address data gaps related to this pathway. A comparison of the proposed well sampling map (Appendix A, Figure 1) with the ACG/CRBG Locality of Facility (LOF) map (Appendix B, Figure 38), indicates a large area of uncertainty in the extent of groundwater contamination in the

ACG and CRBG extending across the Siltronics property and to the Willamette River. Consequently, the lack of groundwater data representative of the ACG presents a significant uncertainty related to the contaminant migration pathway to the Willamette River within the ACG. The characterization is lacking data - both spatially (vertically and horizontally) and temporally. To address data gaps, EPA recommended additional monitoring of existing ACG wells located on Siltronics and Northwest Natural properties. Without addressing uncertainty in the extent of groundwater contamination in the ACG/CRBG, the FS and subsequent monitoring would be unable to effectively evaluate the performance of remedial alternatives to meet the following FS remedial action objectives (RAOs), as stated in the 2016 FS Work Plan:

a. RAO 3 - reduce human health risks from groundwater

b. RAO 4 - prevent migration of constituents in groundwater to surface water

c. RAO 5 - treat or remove groundwater hot spots to the extent feasible

d. RAO 6 - reduce potential for residual NAPL to act as a continuing source to groundwater

e. RAO 7 – treat or remove NAPL hot spots to the extent feasible

EPA recommends that additional monitoring be included in the Data Gap Work Plan. **Attachment 1** to this memo includes a list of wells and analyses to add to the work plan for the FS evaluation. **Attachment 2** includes a list of monitoring wells that should be included as performance monitoring wells to evaluate baseline conditions, plume attainment, and effectiveness of the remedy to address contaminants in the deeper groundwater on the Siltronics and Northwest Natural properties.

2. One of the 2016 FS Work Plan objectives (Section 1.2) is to identify areas and volumes of remedial actions. This objective is not met by the document because the results of the revised Hot Spot Evaluation report (HSE) are not yet available. The text of the 2016 FS Work Plan should include an explanation that another revision of the Work Plan will be prepared presenting remedial action areas and volumes and any other FS changes related to the remedial action areas and volumes.

3. RAO 4 is too vague to support remedial alternative analysis in the FS and further details should be added. Specific COCs to be considered in the FS should be identified along with specific receptors. RAO 4 should include both direct groundwater discharge and indirect groundwater discharge via Outfall 22B.

4. RAO 6 is too vague to support remedial alternative analysis in the FS and further details should be added. Specific dissolved COCs in groundwater to be addressed by the NAPL treatment or removal should be stated.

5. The 2016 FS Work Plan does not address how treatment technologies will be identified and evaluated considering the different depth intervals. Remedial action depth can have a significant impact on implementability of some remedial technologies. Note that technologies should not

always be discounted if treatment depth varies between areas and proves not to be universally applicable across the site.

6. The 2016 FS Work Plan does not address how alternatives will be developed based on the screening matrix provided in Table 4-2 when complex combinations of contaminants of concern are present. This issue often leads to confusion during FS preparation, and appropriate technologies may be screened out or in because of difficulties associated with treating a relatively minor contaminant of concern.

7. Groundwater sampling procedures described in Standard Operating Procedure (SOP) #2 are inconsistent with EPA's low-flow groundwater sampling procedures and may lead to collection of non-representative groundwater samples. EPA's previous comments (Oct 2015) on SOP #2's sampling procedures were not addressed in the Data Gaps Work Plan. The Data Gaps Work Plan should specify: type of submersible pump used; use of Teflon or Teflon-lined tubing for sampling of organic constituents; and alternative sampling method if the well is not suitable for low-flow sampling methods (i.e., excessive drawdown exceeding 0.3 feet during purging).

8. EPA disagrees that additional groundwater monitoring in the area of OF22B is not required to complete FS activities. The OF22B IRAM is part of the groundwater remedy for the site and groundwater monitoring data are needed to evaluate the performance of the OF22B IRAM in minimizing preferential groundwater migration via OF22B. Part of the OF22B IRAM was to install cutoff collars in the backfill surrounding the OF22B pipe to prevent preferential groundwater migration along the backfill of OF22B. Groundwater monitoring conducted quarterly or seasonally to capture cyclic variations, at well RP-01-31 should be conducted to evaluate the effectiveness of the OF22B IRAM and cutoff collars to prevent preferential groundwater migration along the backfill of OF22B. This well is located in proximity of OF22B and at a location downgradient of the cutoff collar.

Comments to Be Considered

1. EPA disagrees with the conclusion that "groundwater constituents as listed in the RI/SCE Addendum that are above SLV criteria in monitoring wells near the river do not pose a risk of sediment recontamination" (Section 3.2, page 10, bullet on groundwater discharge). Concentrations of the Portland Harbor Superfund Site (PHSS) chemicals of concern (COCs), DDx and chlorobenzene, at wells on the riverbank are high enough to result in sediment contamination. EPA agrees that COCs exceeding the JSCS SLVs and PHSS Preliminary Remediation Goals (PRGs) should be evaluated in the FS to ensure that remedial alternatives are protective of the river.

2. A RAO based on hot spot analysis is driven by DEQ requirements. However, this requirement is not explained in the text and should be specific to OAR 340-122-0085 for the FS process. RAOs 2, 5, and 7 should be revised to remove the qualifier, "based on remedy selection balancing factor." As written, the RAOs provide no specific objective to evaluate against the remedial alternatives. EPA recommends incorporating language into these RAOs such as "treatment or

removal to a point where the concentration or condition, no longer makes the hazardous substance in the area a hot spot."

3. SLLI should provide a brief comparison of State Guidance with CERCLA guidance concerning remedial action alternatives evaluation. This would clarify the key differences between the agencies with regards to the multi-criteria analysis. For instance, the comparative analysis presented by SLLI uses evaluation criteria that, under CERCLA guidance, are not allowed to be ranked or weighted. These criteria include Protective of Human Health and the Environment and Compliance with Applicable Standards for Management of Waste. Under CERCLA guidance, these threshold criteria must be met for all alternatives (excluding no action), so the evaluation for them is limited to a Yes, meets threshold, or No, does not meet threshold. Furthermore, the criteria weighting shown in the example table (Table 5-1) should be clarified that these weights are to be assigned by lead agency decision makers and not the property owner.

4. The comparative analysis of alternatives in Section 5.1 does not provide a presumptive remedial action timeframe. Timeframe or the duration of implementation, is an important factor that affects risk reduction/protectiveness, acceptability, and cost in the comparative analysis.

5. A more descriptive outline for the FS report should be provided in Section 7.0, detailing at least one sublevel of categories to be addressed and anticipated appendices.

6. SLLI should replace the schedule with one that shows dependent milestones for the series of events (e.g., draft and final FS Work Plan, revised and final HSE, etc.). As currently shown, one cannot determine the sequencing of the activities. FS activities for collecting data gap information should be included on the schedule.

7. EPA advises caution in the assumption stated on Table 6-1 that data from aquifer testing of the ACG at the neighboring Siltronics and Northwest Natural properties can be used by SLLI to evaluate ACG groundwater extraction remedial alternatives in the FS. Due to the heterogeneous character of the subsurface deposits, site-specific pilot testing may be needed and depend on results of HSE and identification of remedial action areas and depths.

Attachment 1

Recommended Monitoring Wells and Analysis for the Revised Draft – Feasibility Study Work Plan – Operable Unit 1, Former Rhone-Poulenc Portland Site, Portland, Oregon, ESCI #155

Well ID	Frequency	Analyses	Rationale
Wells to Add to the Groundwater Monitoring Work Plan			
AL6-96	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate contaminant transport along the deeper groundwater flow path in the alluvial-colluvial gravel, downgradient of RP sources.
MW-03-137	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate lateral contaminant transport and plume stability along deep groundwater flow path in the alluvial-colluvial gravel unit
MW-05-70	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate vertical contaminant transport from RP sources in the basalt unit at a location where LNAPL and DNAPL have historically been detected.
MW-15	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate the effectiveness of the OF-22B IRAM to limit preferential groundwater contaminant transport along the OF-22B stormwater system.
RP-02-49	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate plume stability in the alluvium near the riverbank.
RP-02-66	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate plume stability in the basalt near the riverbank.
RP-03-30R	Single event	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Delimit the extent of the 1,2-diochlorobenzene plume in the fill and alluvium
RP-03-52R	Single event	VOCs, Herbicides, OCIs, Dioxins/Furans,	Delimit the extent of the 1,2-diochlorobenzene plume in the fill and alluvium

Well ID	Frequency	Analyses	Rationale
		general water quality parameters	
RP-04-48	Single event	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate vertical contaminant transport from RP sources to the alluvial-colluvial gravel at a location where Rhone Poulenc DNAPL has historically been detected, typically characterized by 1,2-dichlorobenzene.
RP-06-95	Quarterly	VOCs, Herbicides, OCS, Dioxins/Furans, general water quality parameters	Evaluate lateral contaminant transport and plume stability along deep groundwater flow path in the alluvial-colluvial gravel unit
RP-06-105	Single event	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify current contaminant concentrations in the basalt.
RP-14-11	Single	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify contaminant concentrations in shallow alluvium near the riverbank.
RP-14-26	Single	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify contaminant concentrations in deeper alluvium near the riverbank.
RP-14-49	Single	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify contaminant concentrations in basalt near the riverbank.
RP-19-90	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify contaminant concentrations in the alluvium downgradient of RP source areas.
RP-19-129	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify contaminant concentrations in the basalt downgradient of RP source areas.

Well ID	Frequency	Analyses	Rationale
RP-21-150	Single event	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify contaminant concentrations in the basalt downgradient of RP source areas.
RP-22-151	Single event	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify contaminant concentrations in the basalt downgradient of RP source areas. Well has not been sampled since 2007.
RP-23-100	Single event	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify contaminant concentrations in the alluvium downgradient of RP source areas.
RP-23-125	Single event	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify contaminant concentrations in the gravel - basalt downgradient of RP source areas.
RP-25-113	Single event	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Identify contaminant concentrations in the basalt downgradient of RP source areas.
Wells in the Monitoring Plan to Increase the Frequency of Monitoring			
RP-01-31	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate the effectiveness of the OF-22B IRAM to limit preferential groundwater contaminant transport along the OF-22B stormwater system. The well is located in proximity of OF-22B, downgradient of cut off collar. Quarterly monitoring events are needed to evaluate seasonal changes in conditions.
RP-07-84	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate plume stability in the alluvial-colluvial gravel near the riverbank.
RP-07-119	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate plume stability in the basalt near the riverbank.

Well ID	Frequency	Analyses	Rationale
RP-11-160	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate lateral contaminant transport and plume stability along deep groundwater flow path in the deeper alluvium near the riverbank.
RP-11-216	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate lateral contaminant transport and plume stability along deep groundwater flow path in the alluvial-colluvial gravel unit near the riverbank.
RP-13-33	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate plume stability in the alluvial-colluvial gravel near the riverbank.
RP-13-43	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate plume stability in the basalt near the riverbank.
RP-24-73	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate plume stability in the alluvial-colluvial gravel near the riverbank.

Attachment 2

Recommended Groundwater Monitoring Wells to Include in the Rhone-Poulenc Facility Remedy Performance Monitoring for Attainment of Remedial Objectives in Deep Groundwater

Well ID	Frequency	Analyses	Rationale
MW-05-175 (Gasco Prop.)	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate the deep groundwater plume west of RP-11 to determine baseline conditions, plume attainment, and effectiveness of the remedy.
MW-14-110 (Gasco Prop.)	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate the deep groundwater plume west of RP-11 to determine baseline conditions, plume attainment, and effectiveness of the remedy.
MW-21-165 (Gasco Prop.)	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate the deep groundwater plume west of RP-11 to determine baseline conditions, plume attainment, and effectiveness of the remedy.
MW-19-180 (Gasco Prop.)	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Evaluate the deep groundwater plume west of RP-11 to determine baseline conditions, plume attainment, and effectiveness of the remedy.
RP-23-85	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Monitor the groundwater plume downgradient of the RP site to document baseline conditions, plume attainment, and effectiveness of the remedy.

Well ID	Frequency	Analyses	Rationale
RP-21-125	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Monitor the groundwater plume downgradient of the RP site to document baseline conditions, plume attainment, and effectiveness of the remedy.
RP-25-86	Quarterly	VOCs, Herbicides, OCIs, Dioxins/Furans, general water quality parameters	Monitor the groundwater plume downgradient of the RP site to document baseline conditions, plume attainment, and effectiveness of the remedy.

Note: Additional performance monitoring wells with screen intervals completed within the Alluvial-Colluvial Gravel may need to be installed and monitored to evaluate attainment of remedial objectives and the effectiveness of the groundwater remedy to address the deep groundwater plume.